इंटरनेट मानक

## Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

"जानने का अधिकार, जीने का अधिकार"
Mazdoor Kisan Shakti Sangathan
"The Right to Information, The Right to Live"

"पुराने को छोड नये के तरफ"
Jawaharlal Nehru
"Step Out From the Old to the New"

IS 9047-6 (1980): Data sheet for aerial ropeways and cableways, Part 6: Data to be supplied by intending purchaser for aerial system for transportation of forestry products [MED 6: Continuous Bulk Conveying, Elevating, Hoisting Aerial Ropeways and Related Equipment]

"ज्ञान से एक नये भारत का निर्माण"
Satyanarayan Gangaram Pitroda
"Invent a New India Using Knowledge"

Act Number 22 of 2005
The Indian Parliament
RIGHT TO INFORMATION

Made Available By
Public.Resource.Org

"ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है"
Bhartṛhari—Nītiśatakam
"Knowledge is such a treasure which cannot be stolen"

BLANK PAGE

BRUTUM FULMEN

IGNORANTIA JURIS NON EXCUSAT

PROTECTED BY COPYRIGHT

UDC 625·57 : 658·711·6 (083·22)

**IS : 9047 (Part VI) - 1980**

(Reaffirmed 2002)

*Indian Standard*

# DATA SHEET FOR AERIAL ROPEWAYS AND CABLEWAYS

## PART VI DATA TO BE SUPPLIED BY INTENDING PURCHASER FOR AERIAL SYSTEM FOR TRANSPORTATION OF FORESTRY PRODUCTS

**1. Scope** — Covers the technical data to be supplied by the intending purchaser of the aerial system for the transportation of forestry products.

**2. Terminology** — For the purpose of this standard, the following definitions shall apply in addition to those covered by IS : 707-1976 'Glossary of terms applicable to timber technology and utilization (*second revision*)'.

**2.1** *Coupe* — A felling area or an area marked for felling.

**2.2** *Cull* — Inferior or rotten part of a standing tree which does not yield any timber. Cull factor gives an idea about the sound volume of timber available in a particular tree.

**2.3** *Quality Class* — It pertains to maximum height of a crop in case of tree species indicating productive quality of the crop.

**2.4** *Exploitable Diameter* — The predetermined diameter at which a tree is required to be felled under different silvicultural systems.

**2.5** *Silvicultural Systems* — System by which crops constituting forests are tended, harvested and replaced by new crop or crops.

**2.6** *Log* — The stem of a tree or a length of stem branch after felling and trimming with diameter 30 cm and above.

**2.7** *Scantling* — A piece of timber whose cross-sectional dimensions exceed 5 cm in both the directions and do not exceed 20 cm.

**2.8** *Billet* — A short length of a thin round log from the stem or branch.

**2.9** *Hakari* — A section of a log obtained by halving, quartering or otherwise splitting or sawing longitudinally so that it is partly round and partly flat, prepared for pulpwood or cooperage stock.

**2.10** *Pole* — A long, solid, straight trunk of a tree 10 to 30 cm in diameter at breast height and thinning gradually to the top to a diameter of about 10 cm.

**3. Data**

**3.0** *General*

a) Date: ..........................................................................................

b) Purchaser: ...................................................................................

c) Location: .....................................................................................

d) Information obtained from: ..........................................................

e) Maintenance and back-up facilities available: ..............................

f) Persons to be contacted: ...............................................................

g) Name of project: ..........................................................................

h) Name of consultants, if engaged by the purchaser: .........................

j) Nature of system, permanent or temporary: ....................................

| | | |
|---|---|---|
| Adopted 28 July 1980 | © December 1980, ISI | [redacted] Gr 4 |

INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Conveyors, Vertical Hoists and Bucket Elevators Sectional Committee, EDC 61; Aerial Ropeways and Cableways Subcommittee, EDC 61 : 5 [Ref : Doc : EDC 61 (3381)]

### 3.1 *Information on Forest Coupe (Area) to be Served by Aerial System*

a) Name of principal species—Give the commercial and the corresponding botanical name of each species: ..................................................

b) Area of coupe: .................................................. hectare

c) Average volume of growing stock per hectare: ..................................................

d) Silvicultural system (selection, clear felling, thinning, etc): ..................................................

e) Volume per unit area for felling: ..................................................

f) Exploitable diameter of the crop: ..................................................

g) Quality class: ..................................................

h) Cull factor: ..................................................

j) Extent of blanks (unworkable one): ..................................................

**Note** — This information shall be given separately for each species of the crop.

### 3.2 *Characteristics of Material*

**3.2.1** *Type of material*.............................Wood/other product..........................

**Note** — Specify the other product to be handled.

**3.2.1.1** In case wood is to be handled, give the following information:

a) Form of product.............................Logs/Scants/Billets/Hakari/Poles

b) Size

| Form of Product | Average Dia mm | Straight Length m | Mass kg |
|---|---|---|---|
| Logs | | | |
| Scants | | | |
| Billets | | | |
| Poles | | | |

c) Availability of each form of product

1) Total number: ..................................................

2) Total volume: .................................................. $m^3$

3) Total mass: .................................................. kg

d) Conversion factor (volume/mass ratio): ..................................................

**3.2.1.2** In case of other products (*see* **3.2.1**), give the dimensional details and mass of unit load: .... ..................................................

**3.2.2** Feeding arrangement at loading point ..................manual/semi-automatic/automatic

a) by what permanent facility: ..................................................

b) by what temporary facility: ..................................................

### 3.3 *Capacity*

#### 3.3.1 *Conveying capacity*

a) Up load .................................................. number or tonne/hour

b) Down load .................................................. number or tonne/hour

c) Unit mass to be transported .................................................. tonnes

d) Number of shifts ..................................................

e) Duration of shift .................................................. hours

f) Monthly operation .................................................. days

g) Annual operation .................................................. days

**Note** — While indicating capacity in tonnes per hour, the point of pick up and discharge point(s) shall be indicated.

**3.3.2** *Future plan*

a) Extension of the length to ..........................................................m

b) Increase of the capacity to ..........................................................t/h

**3.3.2.1** Which is preferable:

a) To increase number of carriers ..........................................................

b) To increase the rope speed ..........................................................

c) Or both ..........................................................

d) Has the purchaser any opinion regarding above..........................................................

**3.3.3** *Type of ropeways*

a) Monocable ropeways (up to 400 t/h)/Bicable ropeways (above 400 t/h)/cableways ..........
..........................................................

b) Circulating type ..........................................................with fixed/detachable grips

c) Type of cableway ..........................................................fixed/luffing/travelling

**3.4** *Length*

**3.4.1** Length of the proposed line ..........................................................

**3.4.2** Drawings and maps (the following drawings shall be provided where available):

a) Topographical maps (state scale and drawing number) ..........................................................
..........................................................

b) Ground profile (state scale and drawing number) ..........................................................
..........................................................

c) Longitudinal section along the route, along the centre line and minimum 6 m on either side of the route ..........................................................

d) Station area contour plan ..........................................................

e) Plan of underground obstructions especially at stations ..........................................................
..........................................................

f) Details of existing/proposed terminal loading/unloading arrangements ..........................................................

**3.4.3** *Route* ..........................................................Straight/Curving

a) How many feed-on points will be utilized ? ..........................................................

b) If there are no topographical maps and ground profiles, then give the following information:
   1) Difference in height of loading station and unloading stations ..........................m
   2) Difference in height of intermediate station and loading station ..........................m
   3) Difference in height of intermediate station and unloading station ..........................m
   4) Any appreciable rise or fall along the route ..........................m

**Note** — It is impossible to construct actual curves. A curving route is effected by a series of angled straight lines with angle stations and is not preferable in a bicable ropeways without drive and divide station.

**3.4.4** *Presence of any obstacles along the route*

a) Railway crossing ..........................................................

b) Highway/road crossing ..........................................................

c) River crossing ..........................................................

d) Housing crossing ..........................................................

e) Transmission towers and lines ..........................................................

f) Temples/mosques/churches, etc ..........................................................

g) Archeological features ..........................................................

h) Working or abandoned quarries ..........................................................

j) Levels in relation to station ..........................................................

k) Swamps ..........................................................

m) Prohibited areas ..........................................................

n) Cultivated lands ..........................................................

p) If there are such obstacles, give detailed information on them ..............................
..............................................................................................

q) Specify clearance to be provided, if any, in relation to levels ..........................
..............................................................................................

**3.4.5** *Working details*

a) Required span (*see* Note 1) ..............................................................
b) Distance between loading and unloading points ..........................................
c) Centres of masts ..........................................................................
d) Mass to be lifted by the hook (*see* Note 2) ...........................................
e) Lowest position of hook below base level of headmast (*see* Note 3) .......................
..............................................................................................

f) Highest position of hook above base level of headmast (*see* Note 3) ....................
..............................................................................................

g) Tailmast base below or above the level of headmast base ...............................
..............................................................................................

h) Difference in level of headmast and tailmast base (*see* Note 4) .........................
..............................................................................................

j) Space available behind the mast for guy anchorages (if necessary) ......................
..............................................................................................

**Note 1** — A cableway with full load cannot be generally worked to closer to the masts than about one-twentieth of the span.

**Note 2** — In some cases the load to be lifted is of more importance than the tonnage per hour to be carried. An indication shall therefore be given as to which is governing factor.

**Note 3** — The height of hook at or near the centre of span generally fixes the height of masts required.

**Note 4** — The headmast is at the driving and controlgear end of the cableway and is thus usually at or near the loading point of the installation.

**3.5** *Location of the Driving Station* — Specify whether the location of the drive station is preferred on..............................Loading station/unloading station/at the drive and divide station.

**3.6** *Facilities at the Loading and Unloading Stations*

**3.6.1** *Loading and unloading station*

a) Planning permissions required for site investigation from authorities ...................
..............................................................................................

b) Present method of handling ................................................................

**3.6.2** *Transportation*

a) Is a full automatic system required for loading and conveying on a shunt rail: ...............
b) Is a full automatic system required for unloading and conveying on a shunt rail: .............
c) Is a semi-automatic system required for loading and conveying on a shunt rail: .............
d) Is a semi-automatic system required for loading and conveying on a shunt rail: .............
e) Manpower (technical/non-technical) availability for manual and semi-automatic loading/unloading: ..............................................................................

**3.6.3** *Discharge Point*

a) Where is the discharge point ?
   1) In the unloading station ..............................................................
   2) In front of the unloading station ....................................................
   3) On the pocket installed at the unloading station ......................................
   4) What distance is required for unloading ? ............................................
   5) Is automatic dumping required for carriers ? ..........................................
b) Is a fully automatic system required for conveying empty carriers on the shunt rail?.........

**3.7** *Available Power*

**3.7.1** Motive power by ..........................................diesel engine/diesel generator.

**3.7.2** Electric power available .................................... Yes/No

**3.7.3** Use of electric power envisaged .................................... Yes/No

**3.7.4** If the usage of electric power is envisaged, give information at **A-6** of Appendix A.

**3.8** *Structures*

**3.8.1** Soil data such as bearing capacity, shear strength, settlement, sliding characteristic, type of soil : ....................................

**3.8.2** The area along the alignment: .................................... private/public

**3.8.3** *Station structures* (*steel, concrete, wood*)

a) Floors ....................................
b) Siding ....................................
c) Roofing ....................................
d) Windows ....................................
e) Insulation ....................................
f) Fire proofing ....................................

**3.8.4** Trestles .................................... steel/wood/combination

**3.8.5** *Storage bins at both terminals*

a) Construction by .................................... purchaser/supplier
b) Design by .................................... purchaser/supplier
c) Required capacity ....................................
d) Material of construction .................................... Steel/RCC/steel with wood liners
e) Has the purchaser any opinion ? ....................................

**3.8.6** *Minimum clearance required along the route*

a) Along the route ....................................
b) Top station ....................................
c) Bottom station ....................................
d) Highest intermediate point ....................................

**3.9** *Climatic Condition*

a) Temperature (outdoor): Maximum .................. °C; Minimum .................. °C
b) Humidity (outdoor): Maximum .................. %; Minimum .................. %
c) Wind velocity: Normal .................. km/h; Maximum .................. km/h
d) Direction of wind ....................................
e) Storm condition:
   1) Maximum wind velocity: ....................................
   2) Duration ....................................
   3) No. of times in a year ....................................

**Note** — If wind rosette is available, furnish the same.

f) Seismic data ....................................
g) Land slide data ....................................
h) Rainfall: Intensity ..................; Total rainfall .................. mm
j) Duration of rainfall: From .................. to ..................
k) Snowfall: Intensity ..................; Total snowfall .................. mm
m) Duration of snowfall: From .................. to ..................
n) Altitude above mean sea level of driving station .................................... m
p) Avalanche data ....................................

**3.10** *Erection and Construction*

a) Site clearance and approach roads by ................................purchaser/supplier
b) Foundation work by ................................................purchaser/supplier
c) Inland transportation by ...........................................purchaser/supplier
d) Supervision by ......................................................purchaser/supplier
e) Erection by .........................................................purchaser/supplier
f) Commissioning by ....................................................purchaser/supplier
g) Who will furnish power, water and compressed air? ....................purchaser/supplier
h) General information about unloading facilities such as:
  1) Available space ....................................................................
  2) Indoor storage .....................................................................
  3) Outdoor storage ....................................................................
  4) Material handling ..................................................................
j) Nearest port/delivery station ...........................................................
k) Nearest railway station .................................................................
m) Nearest roadway station .................................................................
n) Transportation limitations regarding weight and size, if any ............................

..........................................................................................

Note — Give details regarding feeder roads, their conditions and bridges on the roads.

**3.11** *Local Regulations for Aerial Ropeways and Electricity Rule* — State, if any act/regulations controlling the use of aerial ropeways are applicable to the area of operation of proposed aerial system. Also state, the regulations in order of priority, the provisions of which have to be strictly adhered over others........

..........................................................................................

**3.12** *Miscellaneous* — Appendix A specifies additional information which shall, if possible, be also provided by the purchaser to the manufacturer.

**3.12.1** Any other information ..........................................................

..........................................................................................

Note — Data applicable to special system, if any, may be given under this heading.

## APPENDIX A

(*Clauses* 3.7.4 *and* 3.12 and *Explanatory Note*)

## ADDITIONAL INFORMATION TO BE SUPPLIED BY THE INTENDING PURCHASER TO THE MANUFACTURER

**A-1. Present Approximate Cost per Tonne for**

a) Loading ...................................................................................
b) Unloading .................................................................................
c) Extraction ................................................................................

**A-2. Labourer's Average Wage per Month:**

| Catagory of Labourer | Mason | Carpenter | Welder | Foreman | Fitter | Erector |
|---|---|---|---|---|---|---|
| Unskilled | | | | | | |
| Semi-skilled | | | | | | |
| Skilled | | | | | | |

## A-3. Local Material Price for Suitable Construction Material and Its Availability:

a) Cement ..........................................................
b) Steel products ..................................................
c) Aggregate .......................................................
d) Timber ..........................................................
e) Diesel ..........................................................
f) Lubricants ......................................................
g) Coal ............................................................

**A-4. Officers, Labourers and Engineer's Quarters Shall be Provided by**...............................

..........................................................................................

## A-5. Authorities to be Contacted for:

a) Land acquisition ................................................
b) Jungle clearance ................................................
c) Road/highway crossing ...........................................
d) Overhead power transmission line crossing .......................
e) Archeological structures ........................................

## A-6. Electric Power

**A-6.1** Electric power available at ..........................................station/route

**A-6.2** *Electrical Equipment*

| | Loading Station | Unloading Station |
|---|---|---|
| a) *Power Supply:* | | |
| Voltage | .................. V | .................. V |
| Phase | Single/Three | Single/Three |
| Cycles | ................ Hz | ................ Hz |
| | Indoor/Outdoor | |
| b) *Substation:* | | |
| Primary voltage | .................. V | .................. V |
| Secondary voltage | .................. V | .................. V |
| No. of Transformers | .................. | .................. |
| *Available at present:* | | |
| kVA capacity | ................kVA | ................kVA |
| Phase | Single/Three | Single/Three |
| Oil or dry | .................... | .................... |
| *To be added:* | | |
| kVA capacity | ................kVA | ................kVA |
| Phase | Single/Three | Single/Three |
| Oil or dry | .................... | .................... |
| c) *New Transformers:* | | |
| To be added by purchaser/supplier | .................... | .................... |
| Part of tender/separate tender | .................... | .................... |
| d) *Motors—Frame Type:* | | |
| Open | .................... | .................... |
| Splash proof | .................... | .................... |
| Totally enclosed | .................... | .................... |
| Fan cooled | .................... | .................... |

| | Loading Station | Unloading Station |
|---|---|---|
| e) *Illumination of the Complete System to be provided:* | | |
| i) By purchaser/supplier | .................... | .................... |
| ii) Voltage | ..................V | ..................V |
| iii) Cycles | ................ Hz | ................ Hz |
| iv) Incandescent | .................... | .................... |
| v) Flourescent | .................... | .................... |
| vi) Transformer: | | |
| 1) Single phase/three phase | .................... | .................... |
| 2) kVA capacity | .................... | .................... |
| 3) Primary voltage | ..................V | ..................V |
| 4) Secondary voltage | ..................V | ..................V |
| 5) Indoor or outdoor type | .................... | .................... |
| 6) Furnished by purchaser/supplier | .................... | .................... |

**Note** — In case the voltage fluctuations are more than ±60 percent it is preferable to either stabilize the same or to go in for steam/diesel/electric generators/drive system in addition to normal power supply.

f) *Night Lighting required at:*

1) Station ..........................................................................................
2) Intermediate towers ..........................................................................
3) Flood light along the line.....................................................................

g) *Communications System* ...................*to be/not to be included Type:*

Single lights ......................................................................................
Single horn ........................................................................................
Telephone ..........................................................................................
Loud speakers ....................................................................................
Others ...............................................................................................

## EXPLANATORY NOTE

Transportation by rope aerially is another type of transportation system like railways, roads, etc. The forestry products are transported by means of carrier/carriers suspended on tensioned steel wire rope/wire ropes supported at intervals to limit sagging and thereby prevent the products from touching the ground except at planned points.

Aerial ropeways are preferred over other modes of transport due to their inexpensiveness in maintanence, modest power demand, ability to negotiate valleys and steep gradients.

Aerial ropeways used in for transportation of forestry products, normally are of temporary nature and are therefore transportable. The presence of an aerial ropeway in an area depend upon the life of the coupe being served by ropeway. Therefore the motive power used for operating the ropeway is generally either diesel engine or diesel generator. Electrically driven ropeways may be employed depending upon the availability of electric power in areas of operation of portable ropeways covering large number of coupe. In case of electrically driven aerial system being planned to be used, the necessary information as given in Appendix A shall also be provided by the purchaser to the manufacturer.

This part of standard aims at listing the data to be supplied to the manufacturers by intending purchaser of an aerial system for transportation of forestry products. This standard is being issued in six parts which aim at listing the data to be supplied to the manufacturer by the intending purchaser of following types of aerial systems:

| | |
|---|---|
| Part I | Transportation of goods, surface |
| Part II | Transportation of passenger, surface |
| Part III | Transportation of passenger, underground |
| Part IV | Transportation of goods, underground |
| Part V | Portable |
| Part VI | Transportation of forestry products |

Printed at Sree Saraswaty Press Ltd. (Under West Bengal Govt.'s Management), Calcutta 700 009